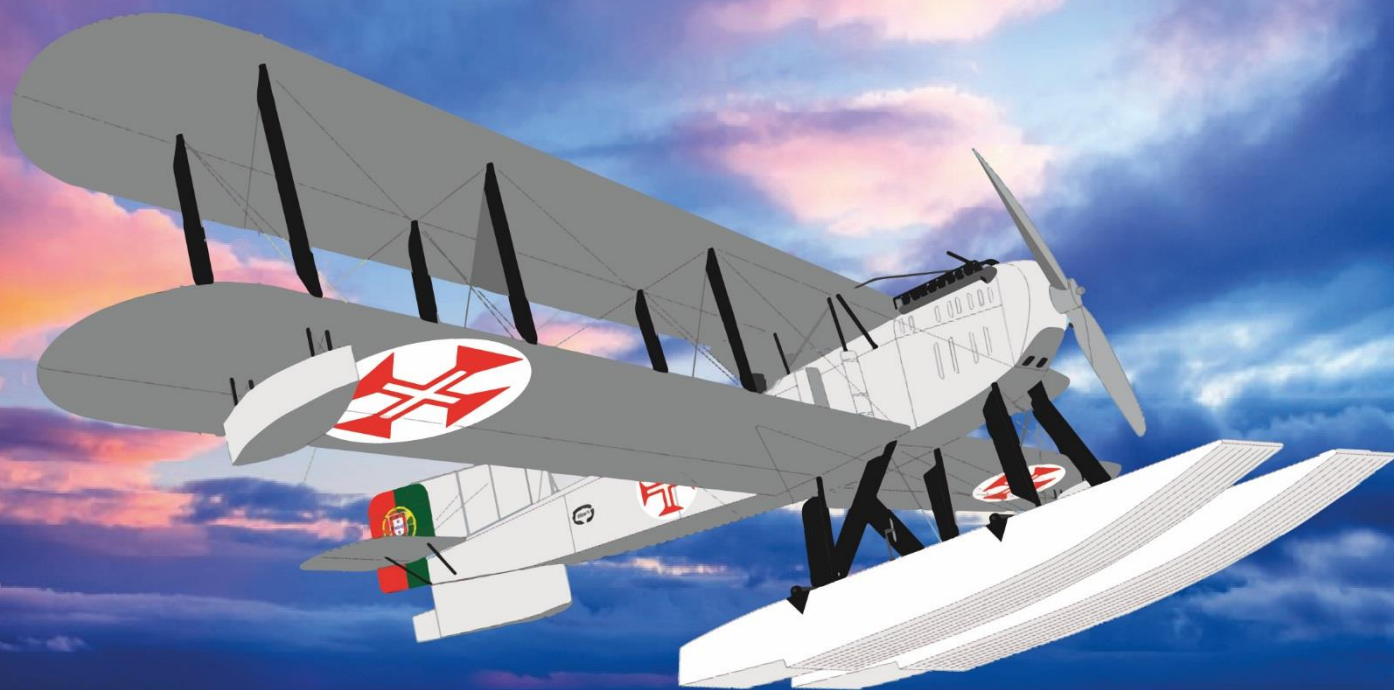




THE CROSSING

Report on the first air crossing from
Lisboa to Rio de Janeiro (1922)

by
Sacadura Cabral
and
Gago Coutinho



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Introduction

The two reports gathered in this publication relating to the First Air Crossing of the Atlantic from Europe to America, Lisbon to Rio de Janeiro, made in 1922 by Lieutenant-commander, aviator Artur de Sacadura Freire Cabral, as pilot and commander of the aircraft, and Captain Carlos Viegas Gago Coutinho as navigator, are fundamental documents for a proper understanding and exact knowledge of the famous air crossing.

The first – **Report on the Air Crossing from Lisbon to Rio de Janeiro** – signed by Commander Sacadura Cabral, is the most authoritative document for an overall study of the historical journey.

The second – **Technical Report on the Navigation** – prepared by admiral Gago Coutinho, is also fundamental, specially from the navigation standpoint.

The tasks were shared in the following manner: both the initiative and the organization and later the leadership of the expedition belonged to Sacadura Cabral; the preparation and performance of the navigation was entrusted from the start to Gago Coutinho, who carried it out during the whole voyage.

As this memorable crossing presents two distinct aspects, both of which truly prominent – heroism and learning – the reports deserve to be duly appreciated having in mind the part belonging to each of these sailor-aviators in the glory of the accomplishment.

The idea, the patriotic initiative and the tenacity in carrying out the voyage belong in truth entirely to Sacadura Cabral. With the purpose of performing a feat of audacity, in face of the various attempts made by foreign nations, and at a time when aviation was trying his first steps; fired by the desire of rendering a worthy service to his country; and with the aim of contributing towards strengthening the Luso-Brazilian ties of friendship – the young aviator, already experienced sailor and geographer, envisaged an air crossing to Brazil.

It would be a novel enterprise as the Atlantic had not yet been flown over from the east to the west and the South Atlantic had never been crossed at all.

Having obtained the support of the Ministry of Marine, he endeavoured to associate the Brazilian aviation in the undertaking but in this he was not successful.

The difficulties which faced him in the choice of an appropriate aircraft and the final realization that the seaplane purchased did not have sufficient range for the crossing from continent to continent, from the coast of Africa to the coast of Brazil, forced him to face the necessity of making voyages between islands, more difficult to find than a continent, and

therefore to carry out astronomical air navigation, a means that had never been employed before.

He needed for the purpose a navigator who, besides being competent, would have to be capable of finding a solution for the problem. The idea of requesting the cooperation of Gago Coutinho arose from the knowledge he had of this officers's exceptional learning and ingenuity as Sacadura Cabral had served under his orders in the geodesical mission in East Africa.

The fearless and adventurous temperament and creative genius of Gago Coutinho were therefore made use of for the task to be performed. It was necessary to create or adapt navigation instruments and methods of astronomical calculation so as to make them appropriate for use in air navigation.

To the initial aspect of courage and audacity was thus added the scientific character of the voyage which would give a still greater prominence to the feat.

Until that time there was no news to the effect that astronomical air navigation had ever been performed and over the sea it had for sure never been used. The only transoceanic voyages – Captain Read, American, Alcock and Brown, English, both in 1919, and from North America to Europe – had been made from continent to continent or with the aid of support vessels spaced along the route. In this manner, therefore, and not taking into account the experimental voyage made in 1921 by the same Portuguese aviators from Lisbon to Funchal, the navigation that was carried out in several parts of the crossing and especially from the port Praia de S. Tiago de Cabo Verde to Penedo de S. Pedro – some rocks 200 metres long practically covered by the Sea with their highest peak at 18 metres, corresponding to the size of a ship – was the first astronomical air navigation made in a transoceanic crossing.

For the purpose in view and in order to improve the navigation, methods were developed and instruments were previously designed.

In the first place, a drift corrector was invented for the navigation as a result of the studies and experiments made together by Sacadura Cabral and Gago Coutinho. This first instrument received the name of “Coutinho-Sacadura Course Corrector”.

Gago Coutinho conceived later the idea of adapting to the sextant used on board ships, for the purpose of measuring altitudes of celestial bodies referred to sea level, a spirit level artificial horizon capable of providing observations of celestial bodies at any altitude, as required in an airplane. The sextant thus modified was named the Precision Astrolab.

Finally, a new method of prior preparation of calculations enabled the determination of the aircraft's position in few minutes – about three – after observation of the celestial bodies, a method that served to meet the demands imposed by the aircraft speed.

This, in essence, is what the reports describe, besides the various stages of this truly epic feat.

What happened forms an admirable page of history, of heroism, of patriotism and of learning. In that famous crossing to Penedo de S. Pedro, on the glorious day of April the 18th, 908 miles were covered over the lonely sea in eleven hours and twenty minutes. During this long journey, the navigation by celestial bodies was rigorously accurate and it could not have been otherwise. Gago Goutinho, as explained in his report, observed 40 groups of sun altitudes corresponding to an equal number of calculations. The seaplane was maintained on a direct and precise course to Penedo de S. Pedro where the cruiser “Republica” was awaiting.

Two hours after take-off, however, they found that the petrol consumptions were higher than anticipated and that they did not even have the help of the wind. So they ran the risk of having to alight on the deserted sea, in the immense ocean, without even being able to send out a call as they were not equipped with wireless of any kind. Indomitable courage and heroism were here also sublime for they refused to turn back. The messages they

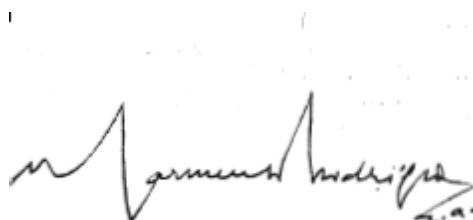
exchanged and which were recorded in the famous “Message Book” are truly epic in their nature. When they sighted the Penedo de S. Pedro and alighted next to the “Republica”, all signs of petrol had disappeared a long time before. They were practically exhausted.

The greatest aerial feat of all had been completed. A deed that allied the spirit of adventure with scientific investigation. Such as were the feats of navigation of other times, that followed the teachings of the School of Sagres.

New horizons had been opened up to air navigation, the fraternal relations with Brazil had been strengthened. The Portuguese nation relived days of enthusiasm, in a perfect uniformity of sentiment to glorify its heroes.

Portugal had offered one more great scientific contribution to the progress of Humanity.

March 30th, 1972.

A handwritten signature in dark ink, appearing to read 'Armando Albuquerque', with a stylized flourish at the end.

President of the National Committee for the Commemorations
of the 50th anniversary of the First Air Crossing from Lisbon
to Rio de Janeiro

NOTE:

The re-edition of these two reports integrated in the 50th anniversary commemorations is a joint initiative of the International Academy of Portuguese Culture and of the Marine Investigation Center. The first prepared the English edition and the second the Portuguese.

Report on the air crossing from Lisbon to Rio de Janeiro

Shortly after the North Atlantic air crossing made in 1919 by the North Americans, Lisbon was honoured by the visit of His Excellency, Dr. Epitácio Pessoa, President-Elect of the Republic of Brazil. Being an adept of a close approach between the two sister countries and wishing to make a modest contribution, within my possibilities, to such an approach and also to express my gratification at seeing Portugal honoured by such a distinguished visitor, I suggested to the then Minister of Marine, Dr. Victor Macedo Pinto, the idea of attempting the air crossing from Lisbon to Rio with the cooperation of the Brazilian Government.

My plan was to interest the air forces of the two countries in the voyage, to obtain at least two aircraft manned by Portuguese and Brazilians and to attempt the crossing with the cooperation of the Brazilian and Portuguese navies.

In my view, this cooperation would contribute towards strengthening the friendship that had always existed between the two nations and would be a natural way of increasing our mutual affection and of realizing that Brazil and Portugal, although geographically separate and independent nations, were, for both the Portuguese and the Brazilians, a single mother country in view of their affinities of language, race, ideas and feelings.

This plan of mine was very well received by the Portuguese Government, which appointed me to study the voyage and immediately published a decree authorizing the credits then believed necessary to carry it out, having also established a prize for the crossing to be awarded only to Portuguese or Brazilians subjects.

GENERAL IDEA OF THE CROSSING

Generally speaking the problem to be faced was as follows.

The air voyage would be of about 4350 nautical miles, the most difficult part being the crossing from Africa to the coast of Brazil where S. Roque cape was the nearest point. The point of departure from Africa would have to be chosen in the region comprising the Cabo Verde islands and extending over Dakar to Portuguese Guiné and the distance to be covered in this part of the crossing would be: about 1600 miles departing from Dakar, 1500 miles from Portuguese Guiné and about 1450 miles using the port of Praia in Cabo Verde islands as the departure point.

It is true that between Africa and the Brazilian coast there is the island of Fernando Noronha which is Brazilian territory but at the time I believed it very problematic to find an island with a maximum dimension of 10 kilometres after covering a distance of at least 2330 kilometres, if we departed from Porto Praia, because the long air voyages over the sea made until then were few in number and few were the conclusions that could be taken on the feasibility of accurate air navigation.

In fact, such voyages had been limited to crossing the Mediterranean, France – Algeria, by the French, the Atlantic crossing the Americans had just made and the direct trip from Newfoundland to Ireland made by the English.

In the first trip practically no astronomical navigation had been used. It was almost unnecessary as in any case the African coast would always be encountered.

The 400 mile distance was relatively short and so reduced the dead reckoning errors and there was the advantage of being able to rectify these when passing in sight of the Balearic islands.

In the crossing made by the Americans it was decided for the seaplanes to be guided by destroyers spaced 60 miles apart, employing direction finding wireless when the fog should prevent the searchlights from being seen.

These precautions did not prevent two seaplanes from getting lost as soon as visibility became precarious. The beaconage of the route and the fact that the report only mentioned astronomical observations after the two seaplanes had alighted were circumstances leading me naturally to the conclusion that the Americans considered air navigation by observations of celestial bodies to be very fallible.

In the crossing made by the English, astronomical navigation was also not of capital importance.

The Irish coast stretches for about 200 miles in the North–South direction so that even if the navigation were very inaccurate, it be difficult not to sight it, and if should happen anyhow, the English coast a little farther on, would form a barrier impossible to avoid.

A small number of observations of celestial bodies was made during the trip but the impression is that confidence in their results was limited.

As I had no experience until then of long air voyages over the sea, I was naturally guided by the results obtained by the French, English and Americans and on examining the descriptions of these crossings I arrived at the conclusion that the problem of calling at the island of Fernando Noronha was of difficult solution.

It is therefore not surprising that at the time, 1919, I should have considered it necessary to cut directly across from Africa, to the coast of Brazil for which purpose an aircraft with a minimum radius of action of 1500 miles would be required.